



Head and Neck

The Cranial cavity I

Meninges & Dural Folds

Dr. Mohamed Elfiky

Professor of anatomy and embryology

Meninges and dural folds

Coverings of central nervous system (CNS):

A- Skeletal Coverings:

- 1- Brain is covered by bones of the cranium (calvaria).
- 2- Spinal cord covered by a cylindrical case of bone (vertebral canal).

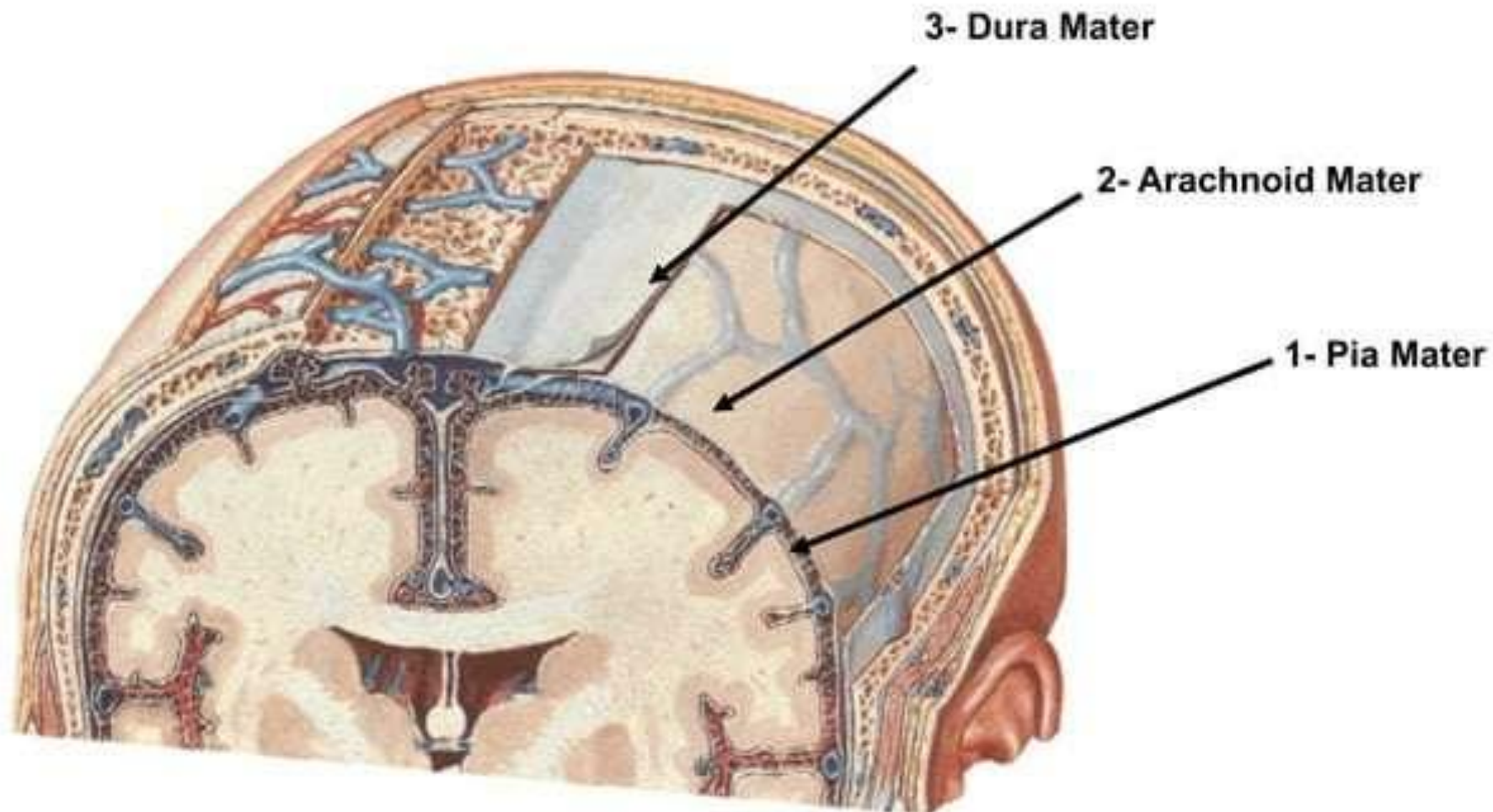
B- Meningeal Coverings:

- 1- Pia matter
- 2- Arachnoid matter
- 3- Dura matter

Meninges

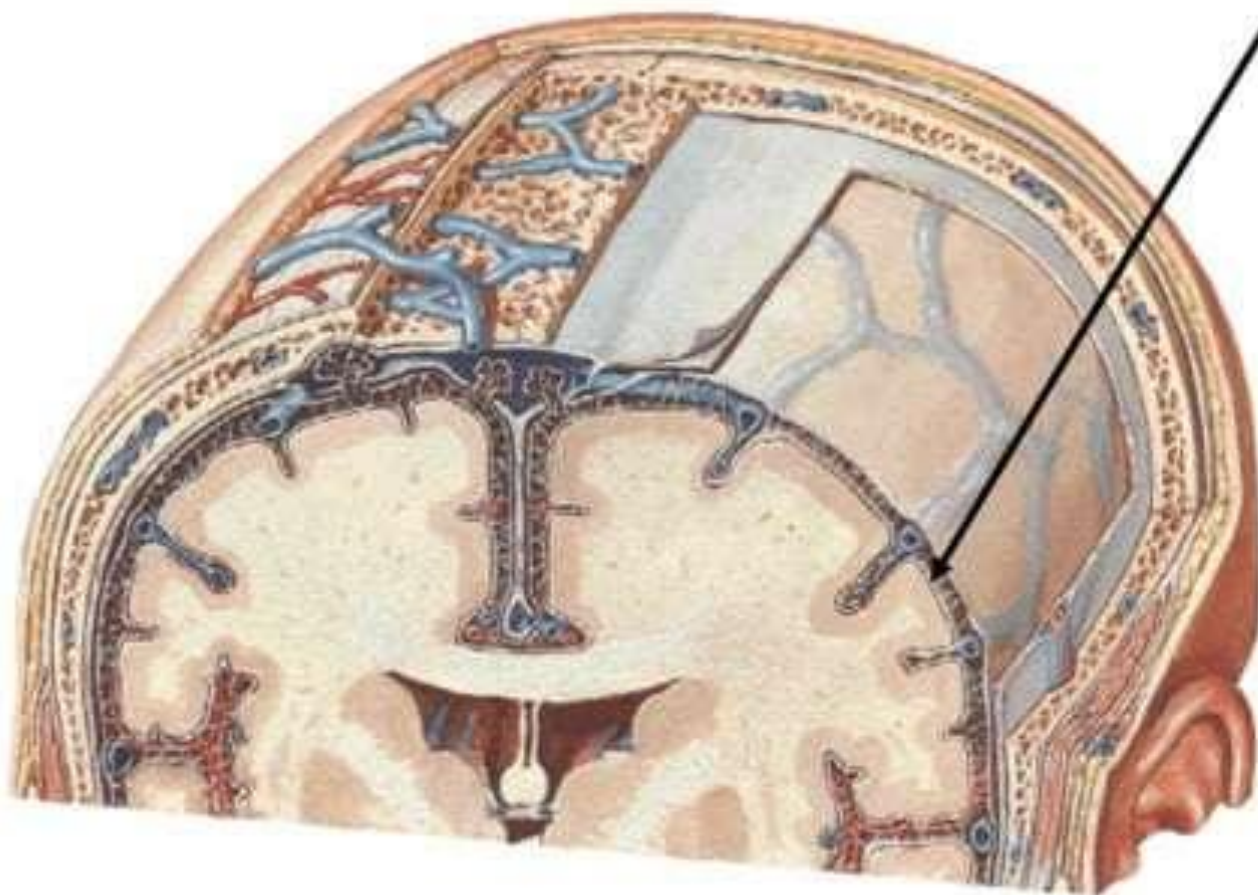
(Cranial and Spinal Meninges)

It is located in in the cranial cavity inside the skull and covered by 3 layers of meninges



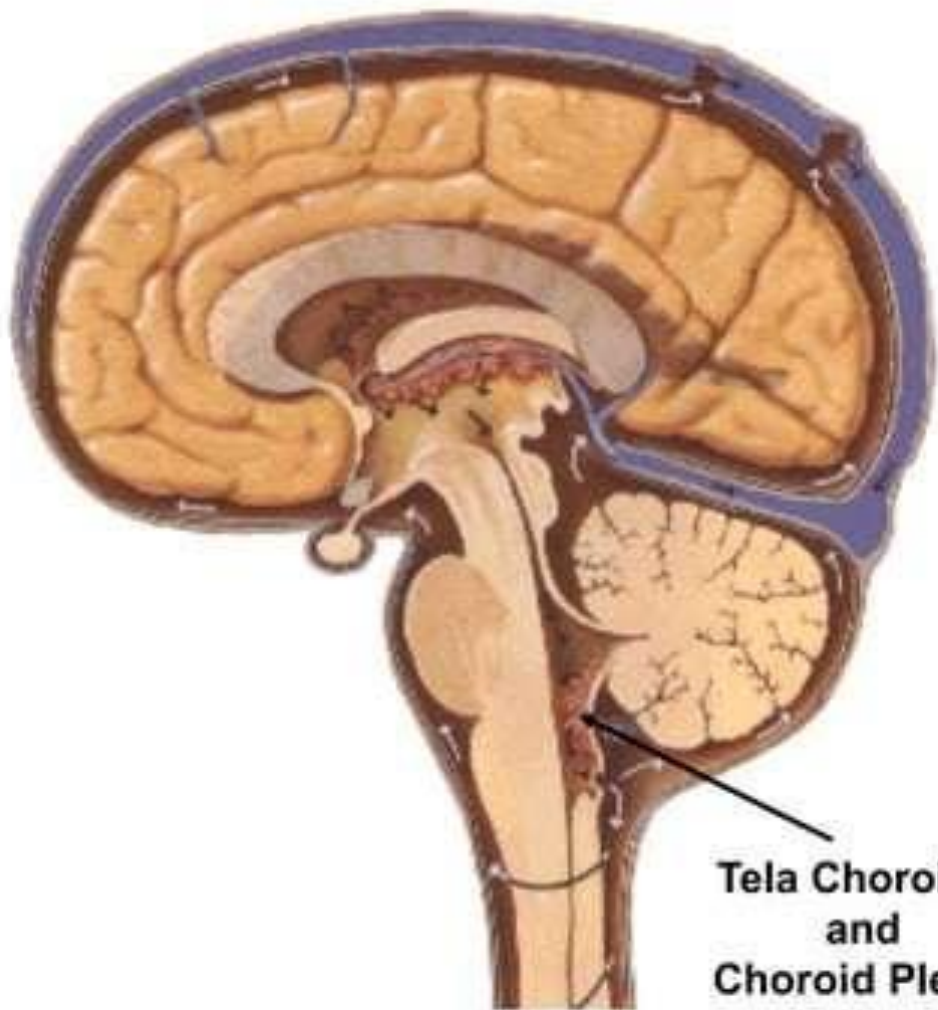
1- Pia Mater

1- Pia Mater

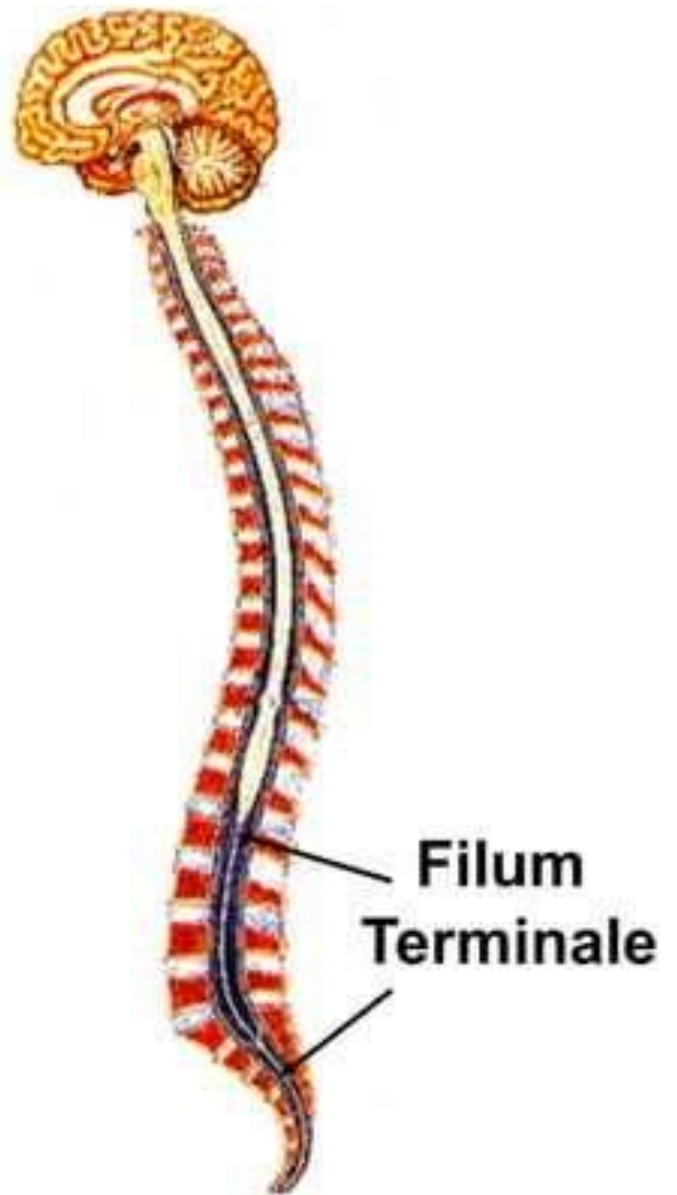


eNisa

MOHAMED EL FIKY



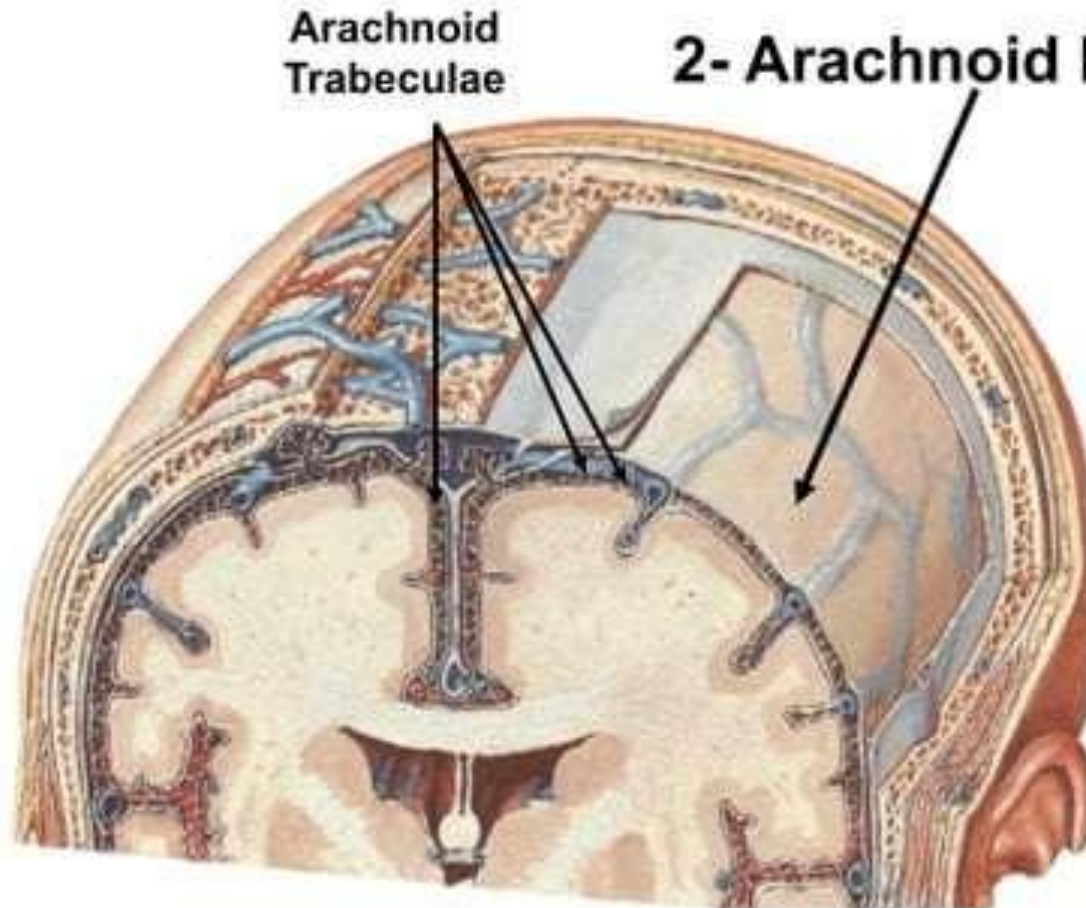
**Tela Choroidae
and
Choroid Plexus**



**Filum
Terminale**

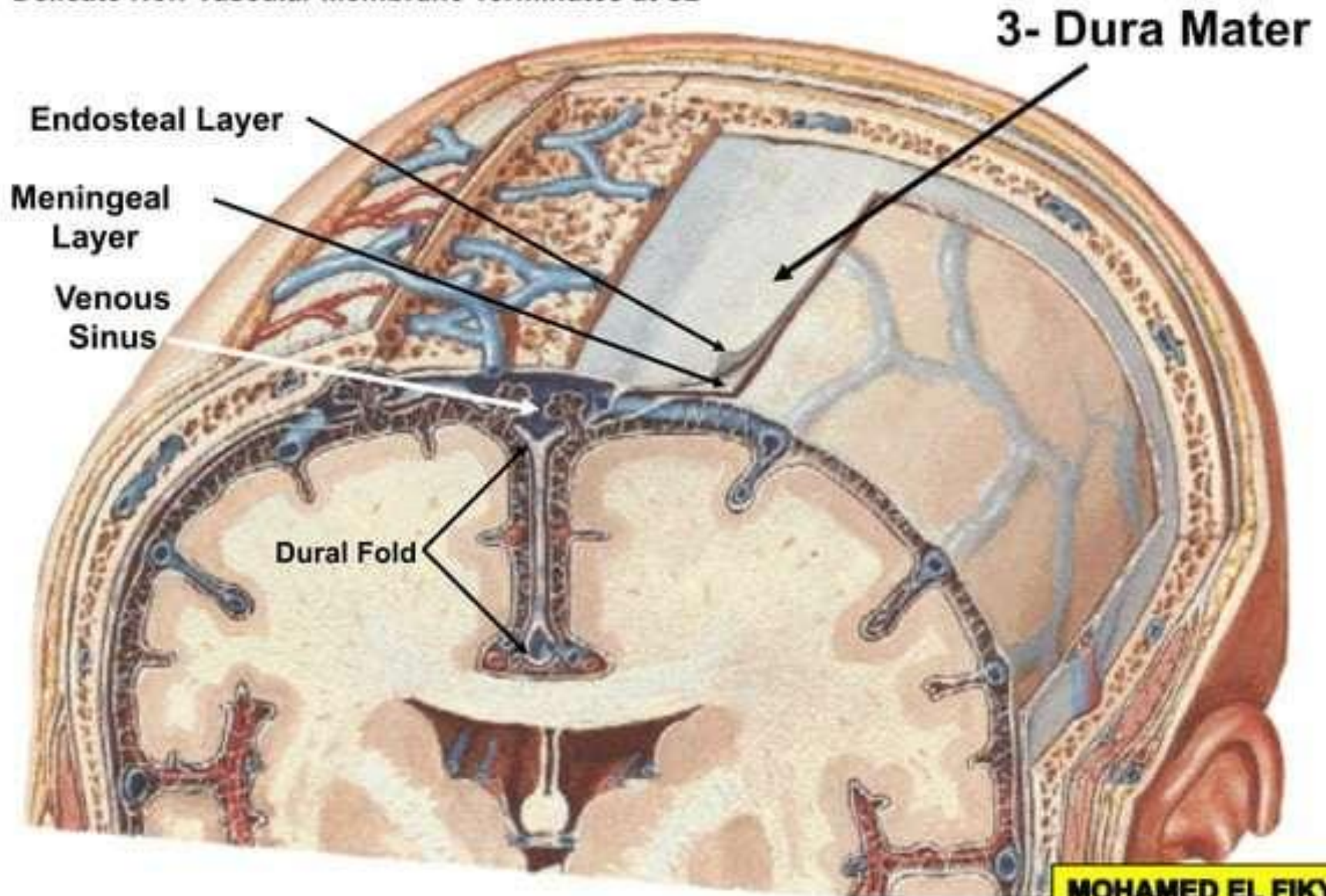
2- Arachnoid Mater

Delicate Non-Vascular Membrane Terminates at S2



3- Dura Mater

Delicate Non-Vascular Membrane Terminates at S2



Coronal Section

Subarachnoid Villi
and
Granulations

Emissary Vein

Endosteal Layer

Meningeal
Layer

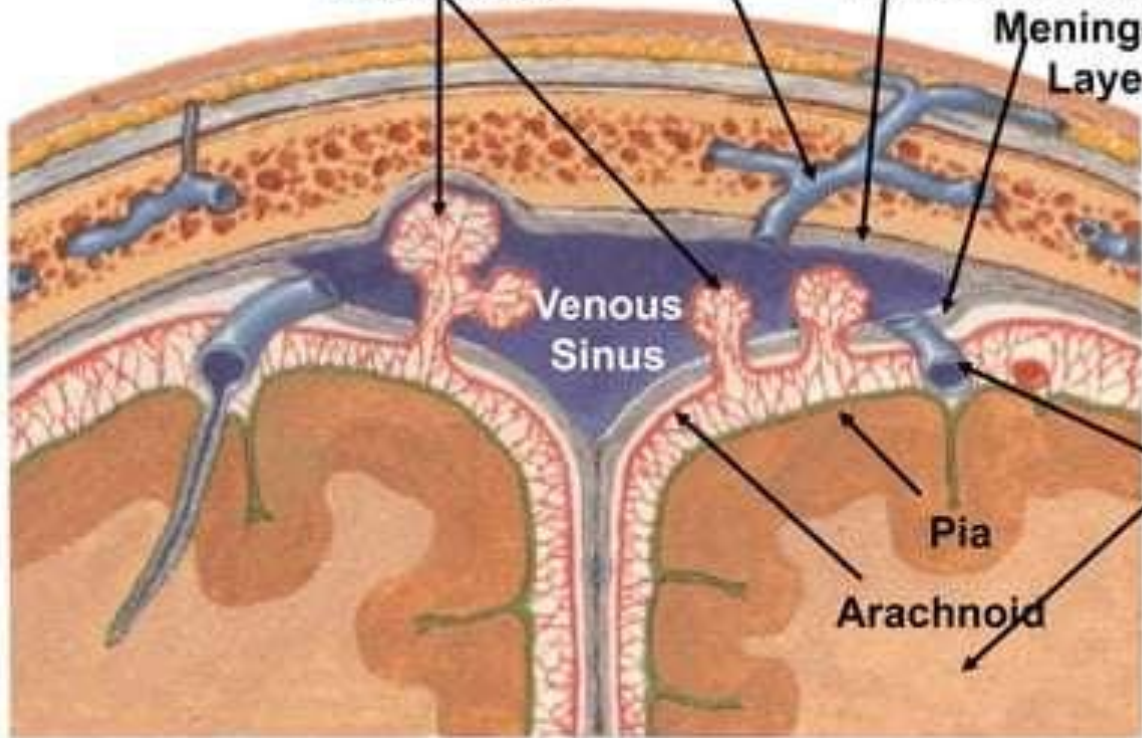
Venous
Sinus

Pia

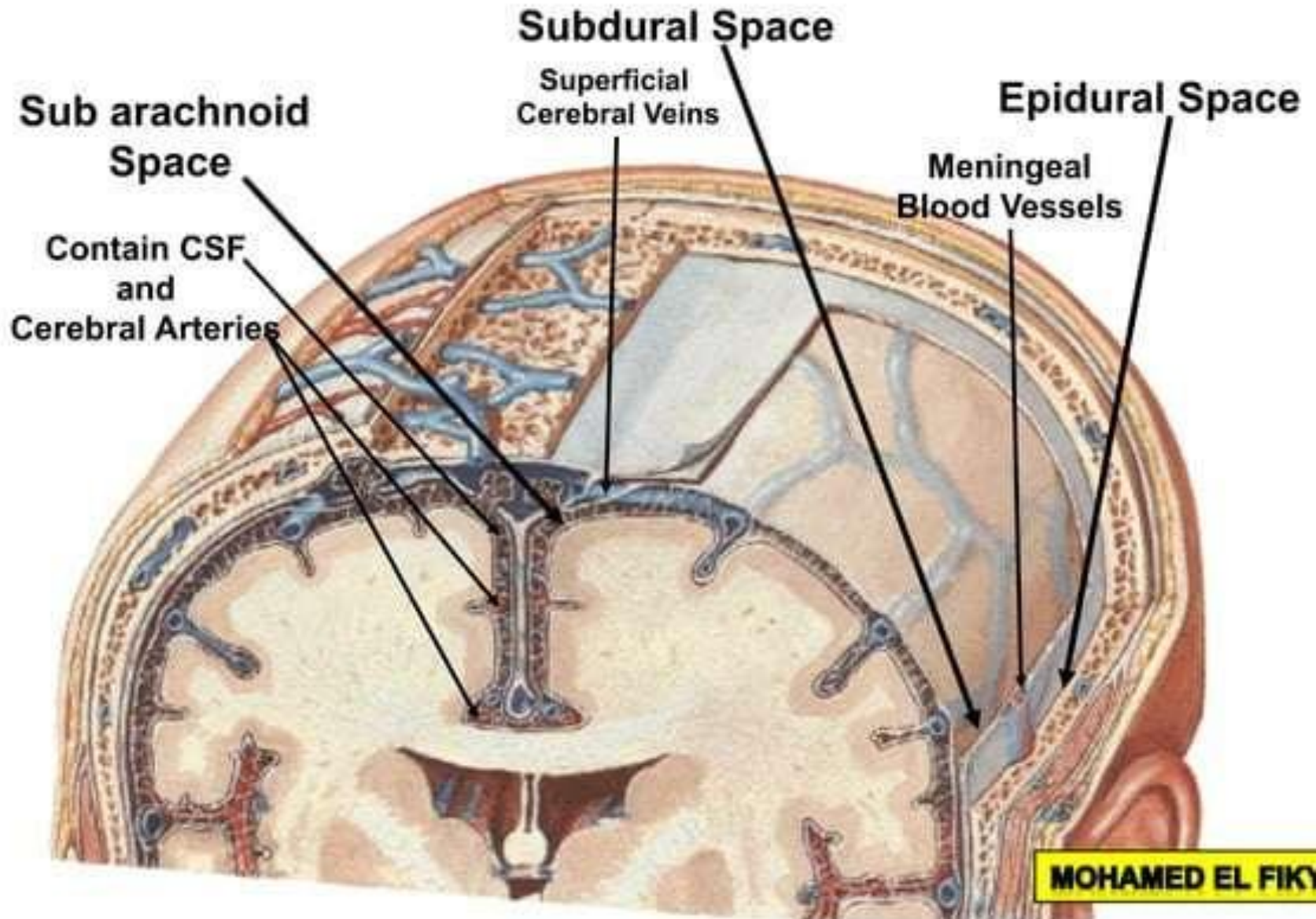
Arachnoid

Cerebral Vein

Termination
of
Dura Matter
at
The Level of S2



Meningeal Spaces

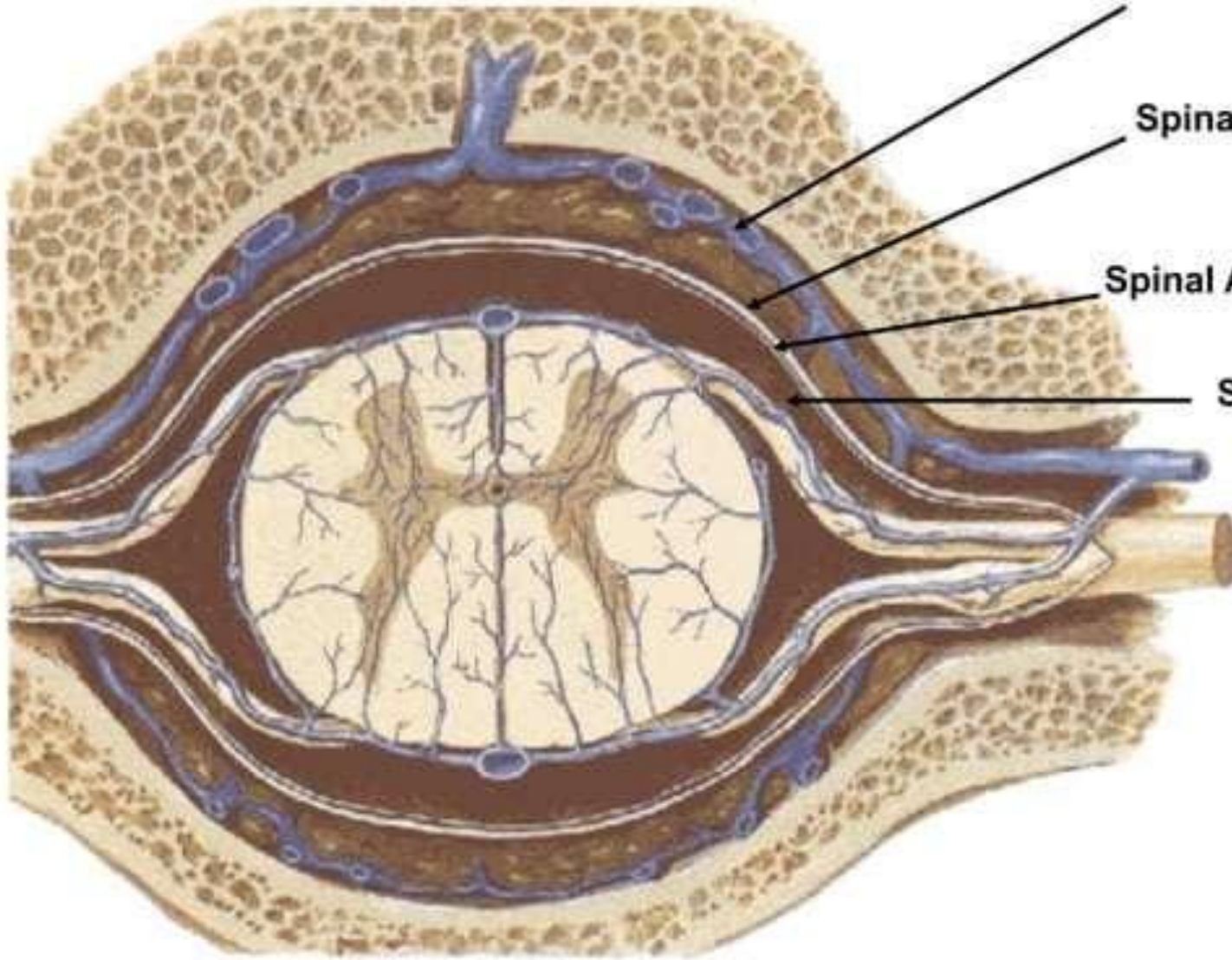


Epidural Space
(contains internal vertebral venous plexus)

Spinal Dura Mater

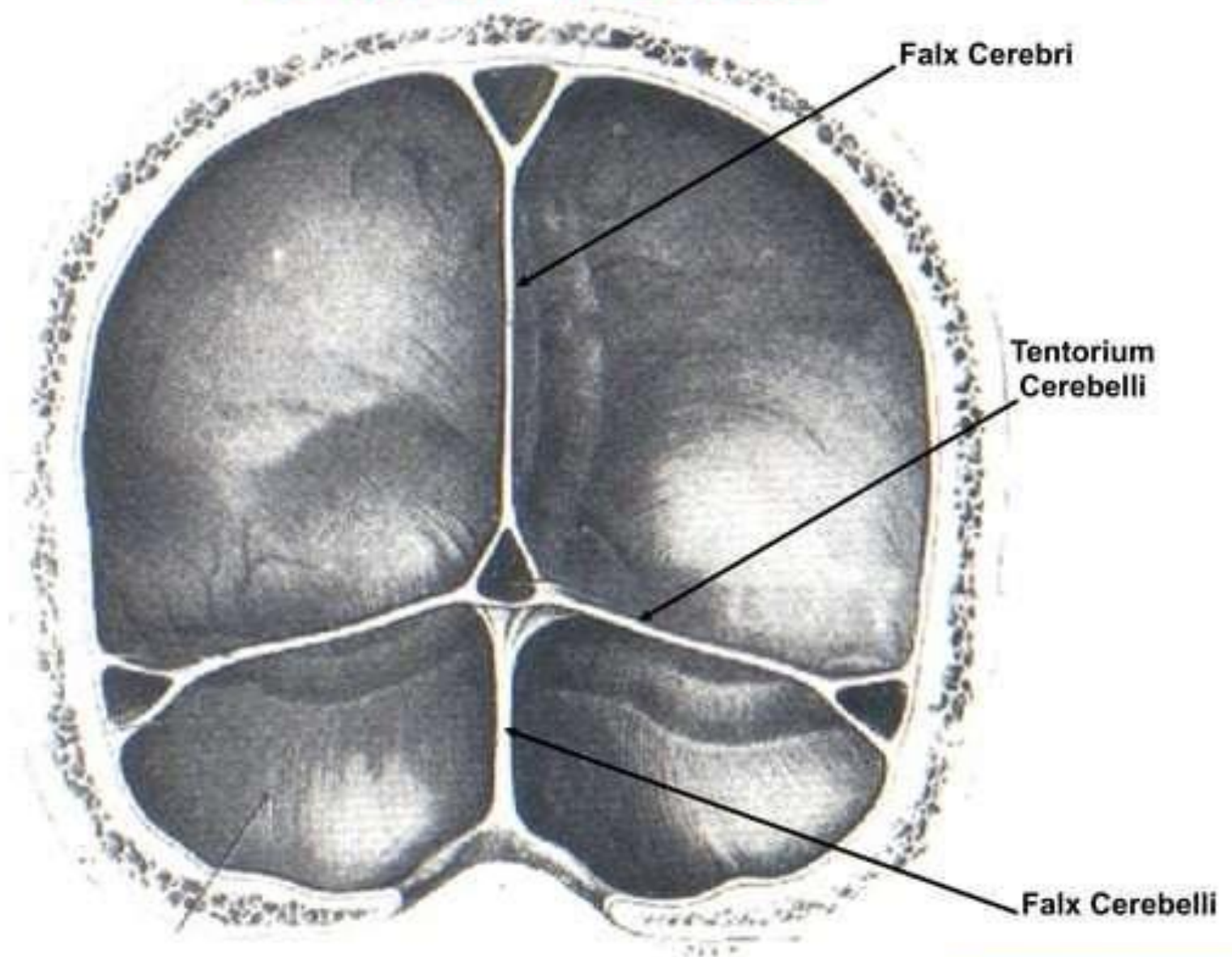
Spinal Arachnoid Mater

Subarachnoid space



MOHAMED EL FIKY

Dural Folds



1- Falx Cerebri

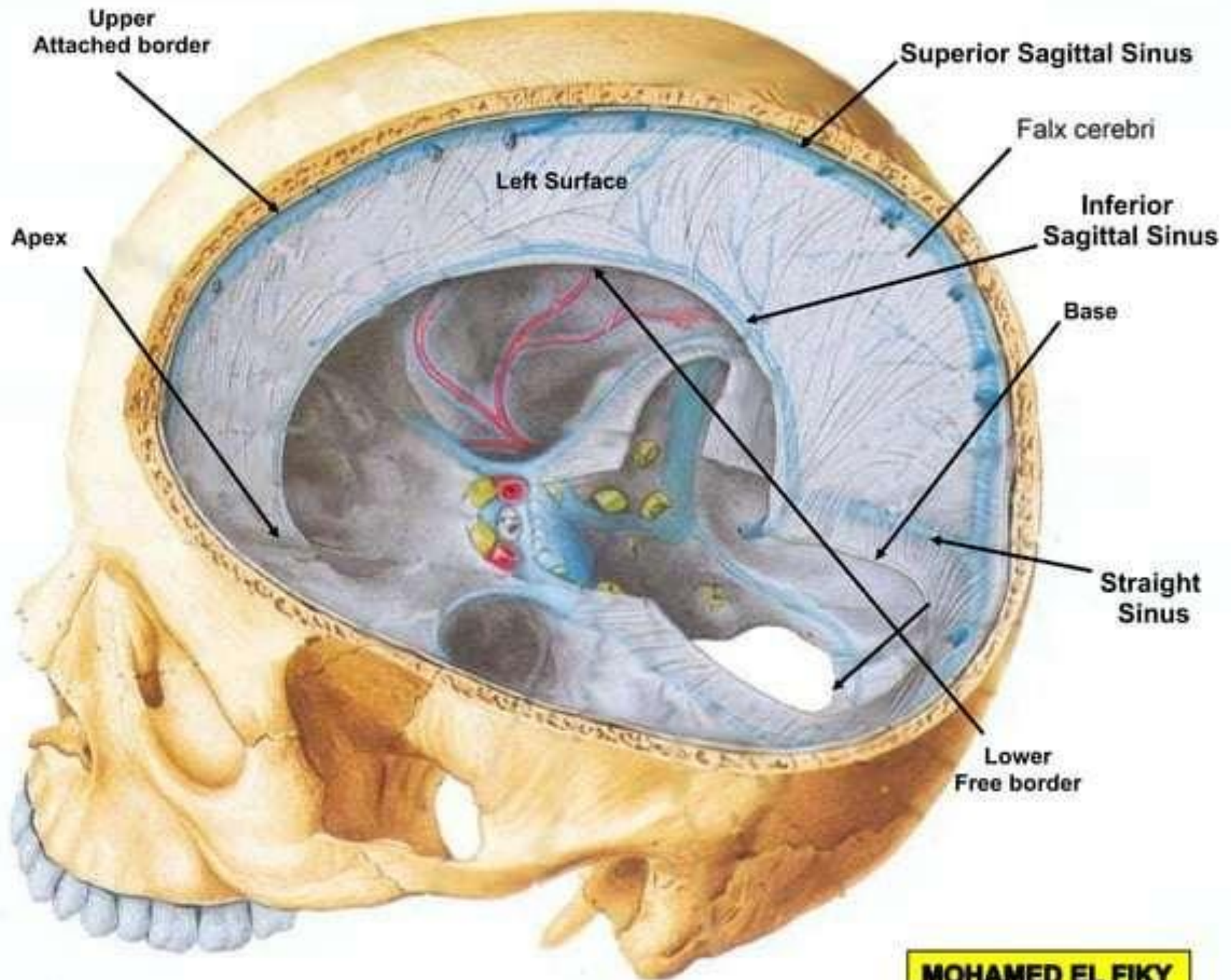
Definition: It is a large sickle-shaped reduplication of the inner layer of dura mater Site: Occupies the median longitudinal fissure between the two cerebral hemispheres.

Features:

- (a) Apex: is narrow and is attached to the crista galli.
- (b) Base: is broad and is attached to, the tentorium cerebelli in the median plane.
- (c) Upper margin: is convex and is attached to the lips of the sagittal sulcus on the inner surface of the vault of the skull.
- (d) Lower margin: is concave and free. It encloses the inferior sagittal sinus in its posterior two-thirds.
- (e) Right and left surfaces: are related to the medial surface of the corresponding cerebral hemispheres.

Sinuses enclosed in it:

- (1) Superior sagittal sinus: in its upper convex margin.
- (2) Inferior sagittal sinus: in the posterior 2/3 of its lower margin.
- (3) Straight sinus: within the junction of the falx cerebri with the tentorium cerebelli in the median plane.



2- Tentorium Cerebelli

Definition: It is a tent-shaped reduplication of the inner layer of the dura. Site: between the cerebellum and the cerebrum.

Features: It has:

(1) *Two surfaces*, Superior and inferior.

Superior surface: gives attachment to the *falx cerebri* in the median plane.

Inferior surface: concave to fit the superior convex surface of the cerebellum

(2) *Two border*, attached and free

(Attached border: is attached on either sides to:

(a) Posterior clinoid process.

(b) Lips of superior petrosal sulcus along the upper border of petrous temporal bone.

(c) Lips of transverse sulcus of the occipital bone.

Free border: U-shaped

(a) tentorial notch which transmits the midbrain.

(b) it crosses the attached border at the apex of petrous temporal to be attached to the anterior clinoid process.

Sinuses enclosed in it:

(1) Transverse sinus: in the attached border along the transverse sulcus.

(2) Superior petrosal sinus: in the attached border along the superior petrosal sulcus.

(3) Straight sinus: In the midline along of its attachment with the falx cerebri.

Cranial nerves piercing it:

(1) Oculomotor: in front of the point of crossing of the free and attached borders.

(2) Trochlear: at the point of crossing.

(3) Trigeminal nerve: behind the point of crossing

Attachments of Tentorium Cerebelli

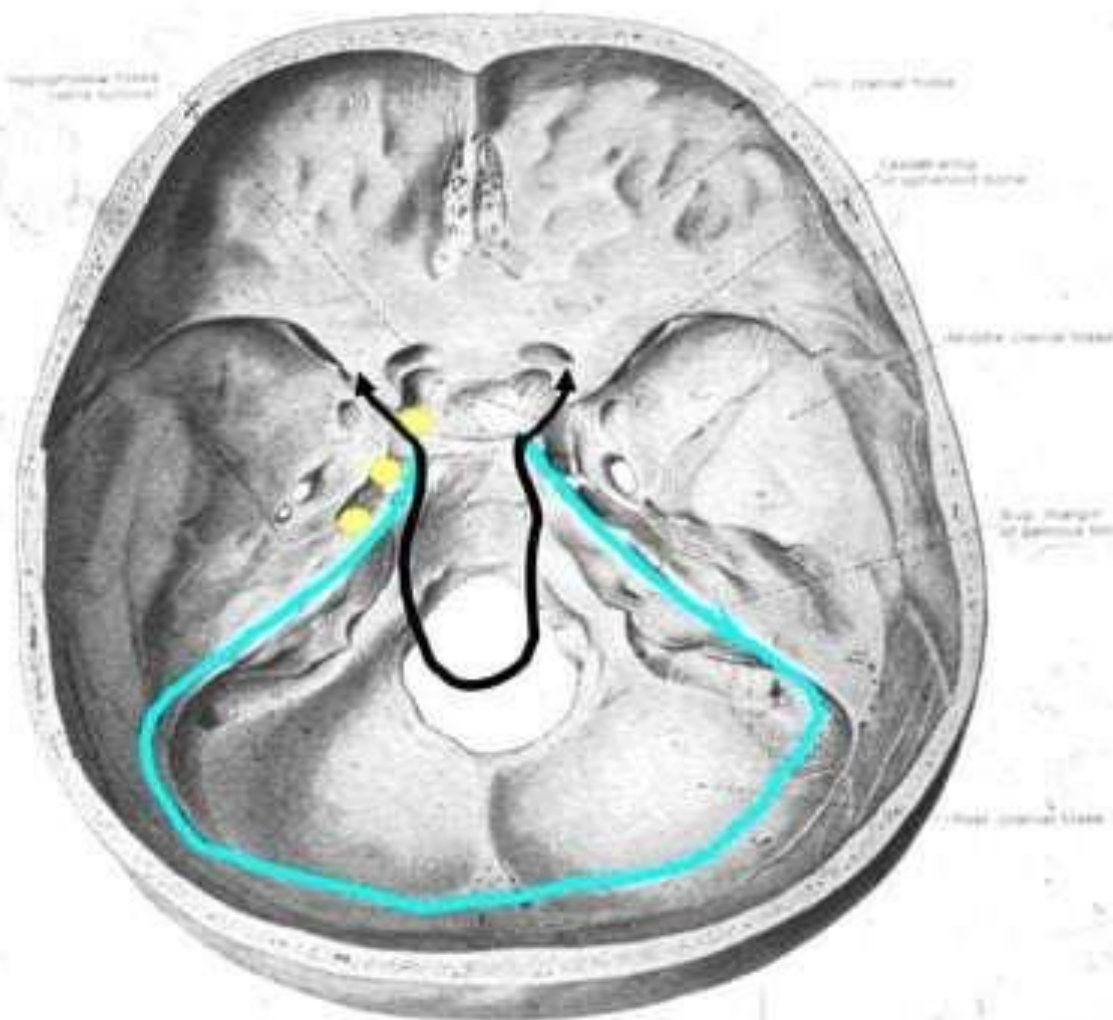
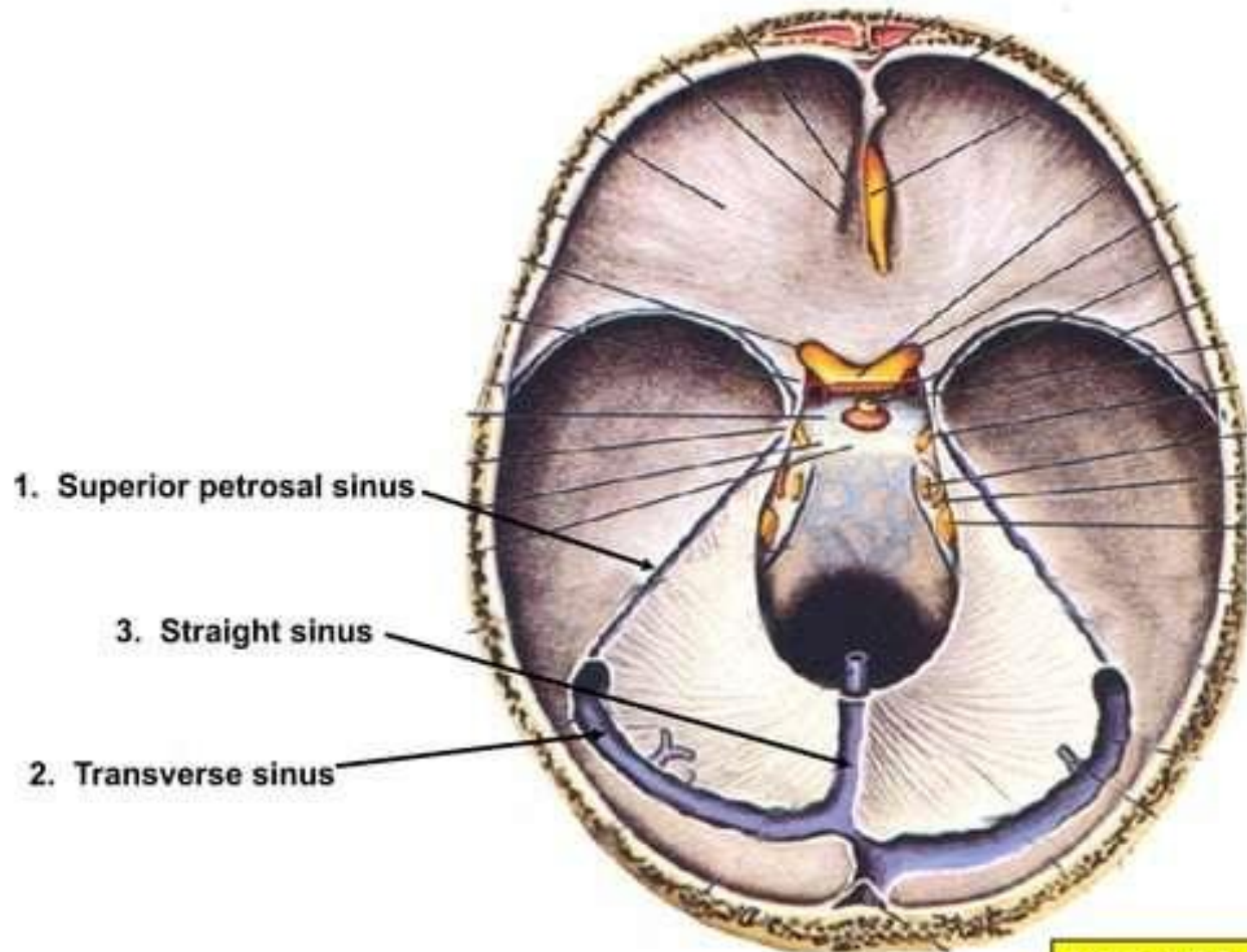


Fig. 17. The base of the skull, inner (superior) surface.

Sinus Content of Tentorium Cerebelli



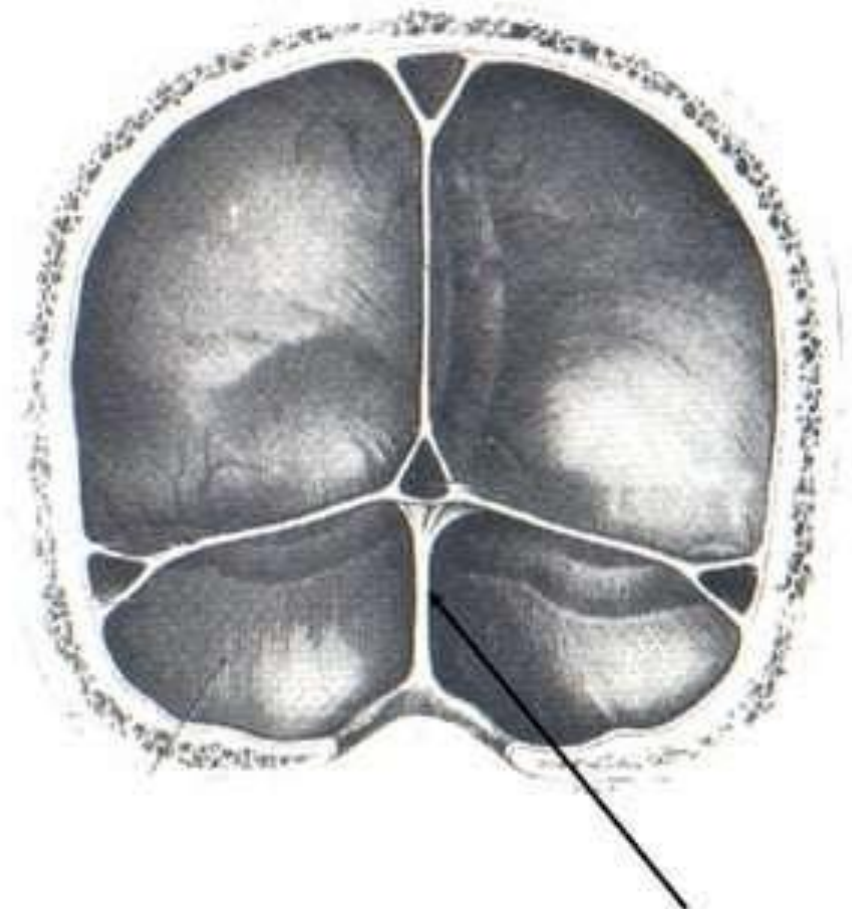
3- Falx Cerebelli

Definition: is a reduplication of the inner layer of the dura which projects forwards into the posterior notch of the cerebellum.

Shape: inverted triangle. Features:

- (1) The base: is directed upwards and is attached to the tentorium cerebelli in the median plane.
- (2) The apex: is directed downwards till the foramen magnum.
- (3) Posterior margin: encloses the occipital sinus.
- (4) Anterior margin: is free and projects in the posterior notch of the cerebellum.

Sinuses enclosed in it: The occipital sinus in its posterior border



Falx Cerebelli

4- Diaphragma Sellae

Definition: is a small circular fold of the inner layer of the dura which covers the pituitary in the hypophyseal fossa.

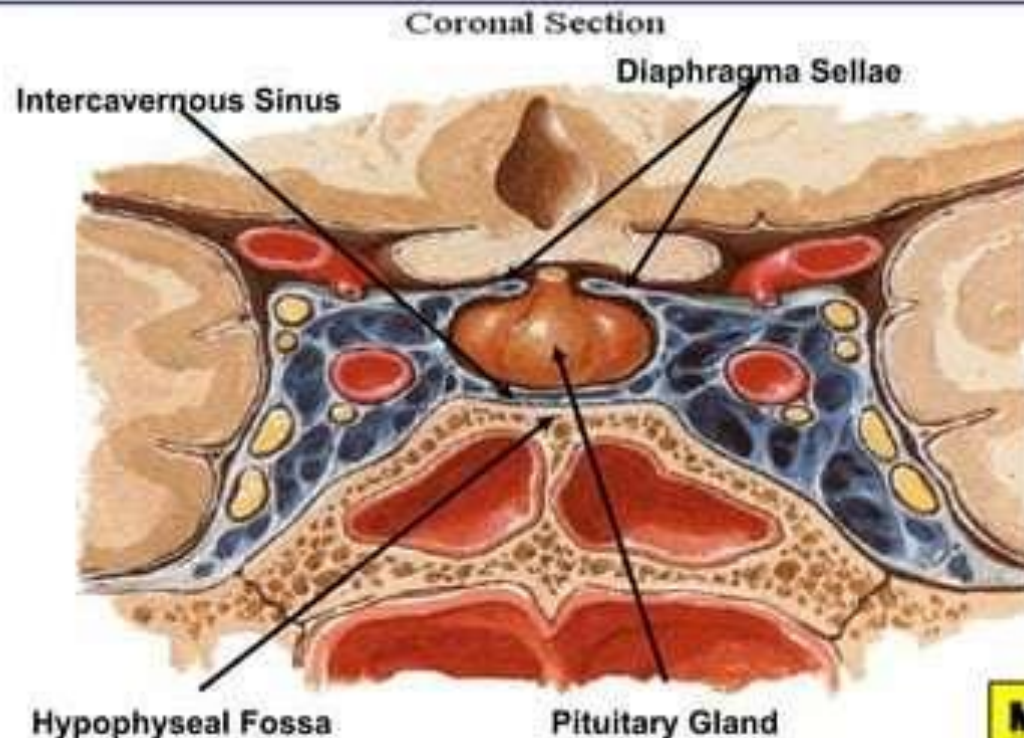
Attachments:

(1) Anteriorly: to the tuberculum sellae.

(2) Posteriorly: to the dorsum sellae.

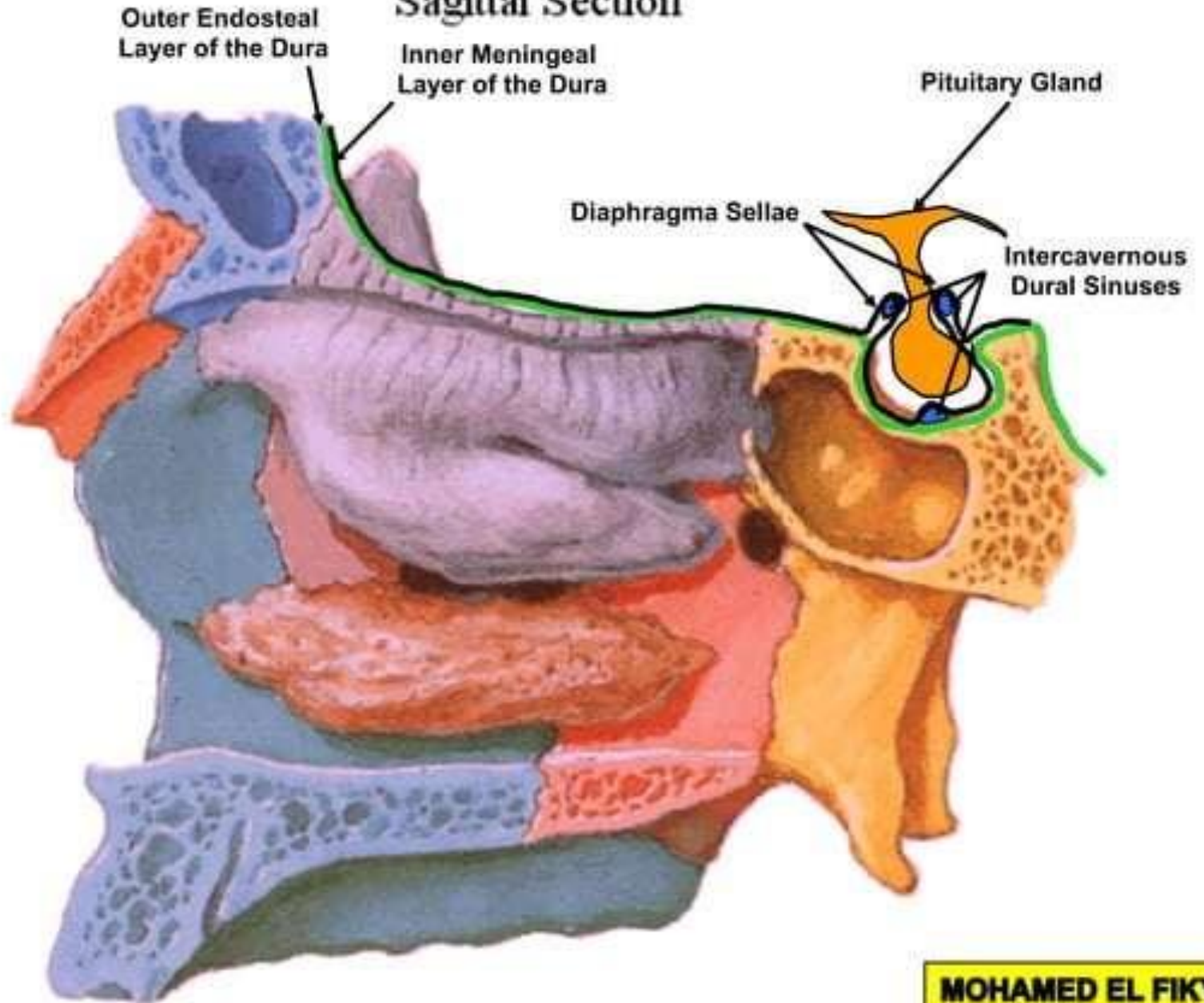
Features: has a central aperture which transmits the infundibulum (Pituitary stalk).

Sinuses enclosed: intercavernous sinuses.



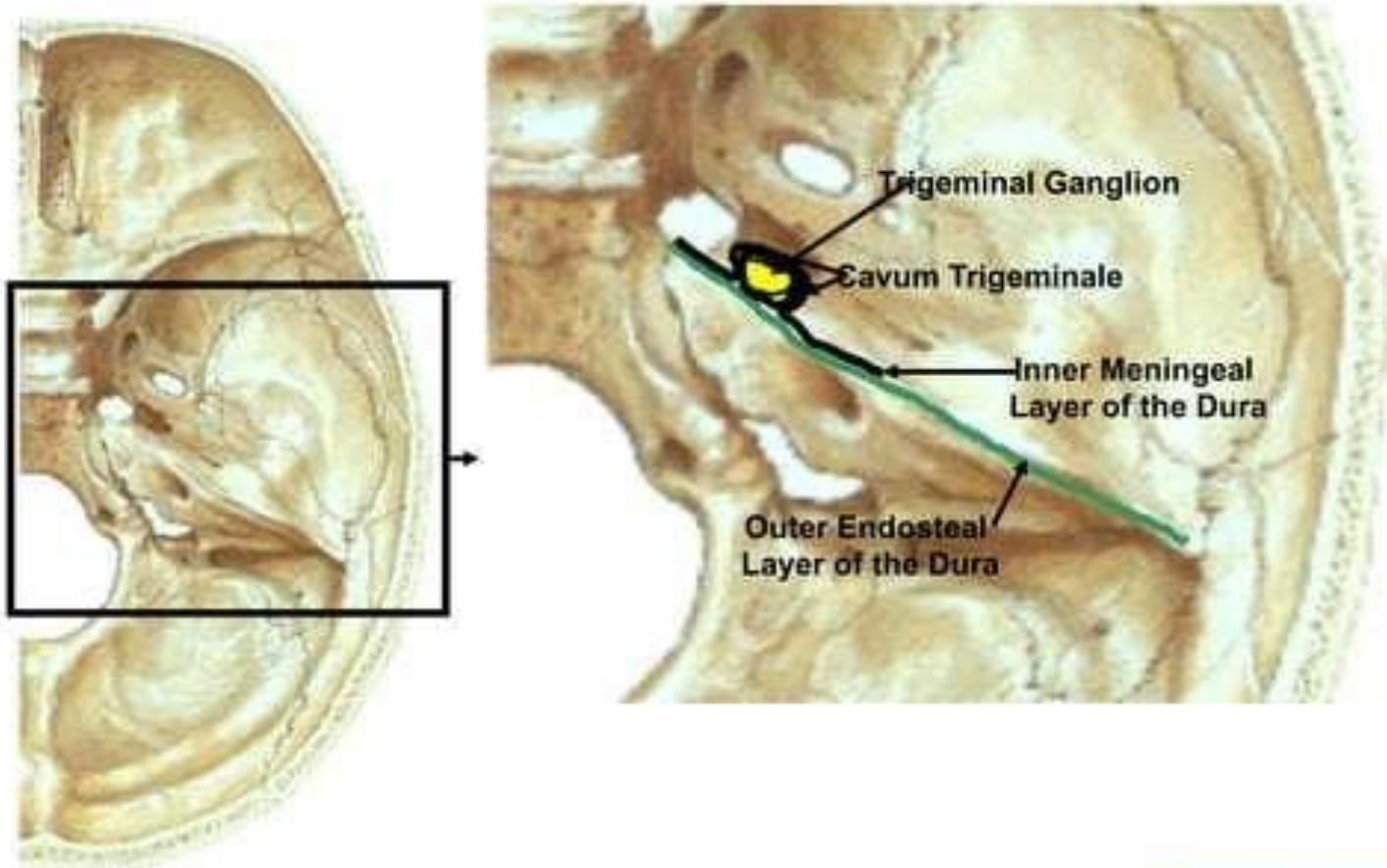
Skull - Nasal Conchae Exposed

Sagittal Section



5- Cavum Trigeminale

Cavum trigeminale : is reduplication of the inner layer of the dura, to form a special space which is occupied by the trigeminal ganglion.



Nerve supply of the dura

- 1- *The dura of anterior cranial fossa* : supplied by the anterior and posterior ethmoidal nerve.
- 2- *The dura of the middle cranial fossa* : supplied by nervous spinosus (br. of mandibular) and meningeal branch of maxillary nerve.
- 3- *The dura of posterior cranial fossa* : supplied by the meningeal branches of the 9th , 10th & 12th cranial nerves .
- 4- *The dura around foramen magnum* : supplied by 1st, 2nd & 3rd cervical nerves .

Arterial supply of the dura

- 1- *The dura in the anterior cranial fossa* : is supplied by anterior and posterior ethmoidal arteries (branches of ophthalmic artery)
- 2- *The dura in the middle cranial fossa* : is supplied by :
 - a. Accessory and middle meningeal arteries (branches of maxillary a.)
 - b. Recurrent branch of lacrimal artery (br. of ophthalmic a.)
- 3- *The dura of posterior cranial fossa* : is supplied by vertebral , occipital and ascending pharyngeal arteries